How to design policy packages for sustainable transport: Balancing disruptiveness and implementability

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(A) The need for a sustainable mobility transformation

A wide-reaching transformation of the passenger transport system is necessary immediately to fulfil the goal of limiting global warming to 1.5 degrees and to prevent irreversible damages to social and natural systems caused by anthropogenic climate change (Geels et al., 2017; IPCC, 2018). Achieving this goal requires a transformation in policymaking towards designing disruptive policy packages which integrate not only efficiency improvements but also traffic reduction and shifts to more sustainable modes (Cohen et al., 2016; Dalkmann & Brannigan, 2007; Kivimaa & Kern, 2016). We define **disruptive policies** as *"policies that have been developed to drastically decrease transport-related emissions by promoting a fundamental shift in the current system towards more sustainable and carbon–neutral mobility solutions"* (Thaller et al., 2021). Drastically reducing emissions from passenger transport is particularly relevant for industrialized countries, as the share of emissions from transport tends to be high and continues to rise (Saboori et al., 2014).

AT A GLANCE

- **Emission growth** in the transport sector is still prevalent (UBA, 2018)
- Climate change **mitigation** for reaching carbon neutrality in 2040
- Many other goals go hand in hand, such as **air quality, noise, safety, health, quality of life,** etc. (Santos et al., 2010)
- Far-reaching change & stronger focus on **demand-side** approaches necessary (Creutzig et al., 2018)
- **Strategies based on Banister's (2008) sustainable mobility paradigm**: (a) reduce the need to travel (less trips), (b) encourage modal shift, (c) reduce trip lengths and (d) encourage greater efficiency in the transport system
- Shift towards sustainable mobility is unlikely to occur by itself → **focus on policy making** (Cohen et al., 2016; Kivimaa & Kern, 2016)

(B) The research approach

RESEARCH GAP: few studies on policy packaging design to smoothly and ultimately transition to a low-carbon pathway for passenger transport in a short period of time.
OBJECTIVE: improve understanding of how balanced policy packages can be designed to achieve sustainable mobility transformation in industrialized countries.
METHODS: using a mix of different qualitative methods (literature review, expert interviews and stakeholder workshop) to obtain a holistic overview of the transformation of mobility through disruptive policy packages.

(1A) identify policies that could potentially contribute to disruptive policy packages and **(1B)** arrange them in a categorical system

LITERATURE REVIEW (n = 107)

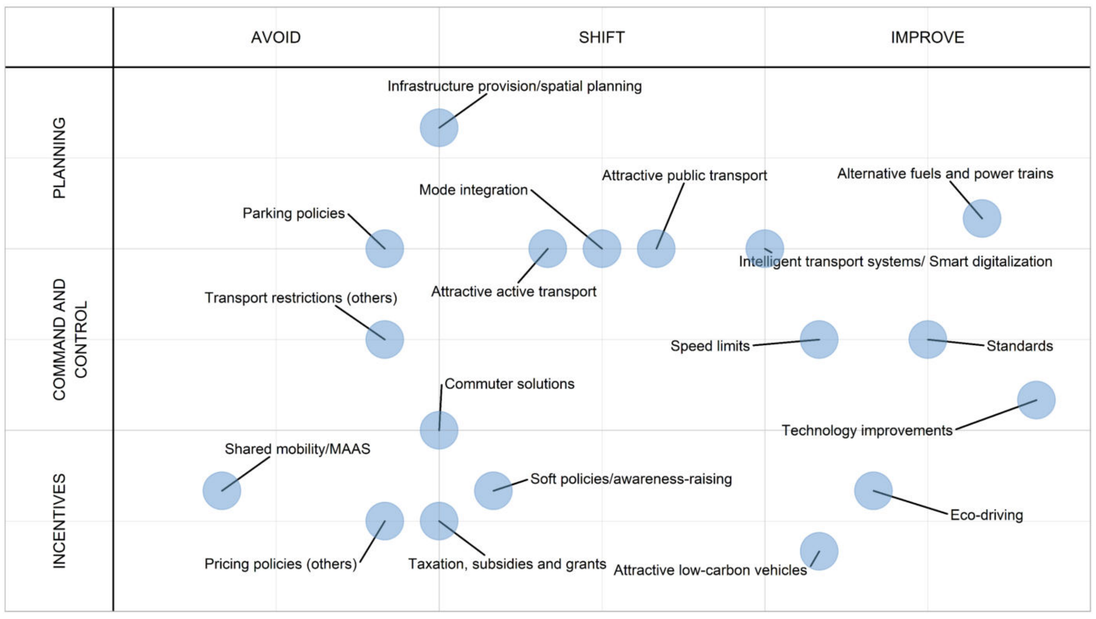
(2A) critically assess the policies identified in the literature review and **(2B)** combine them into draft policy packages

EXPERT INTERVIEWS (n = 13)

(3A) integrate additional perspectives from different stakeholder groups and **(3B)** focus on three geographical areas and their needs

STAKEHOLDER WORKSHOP (n = 37)

(C) Elements of a disruptive policy package



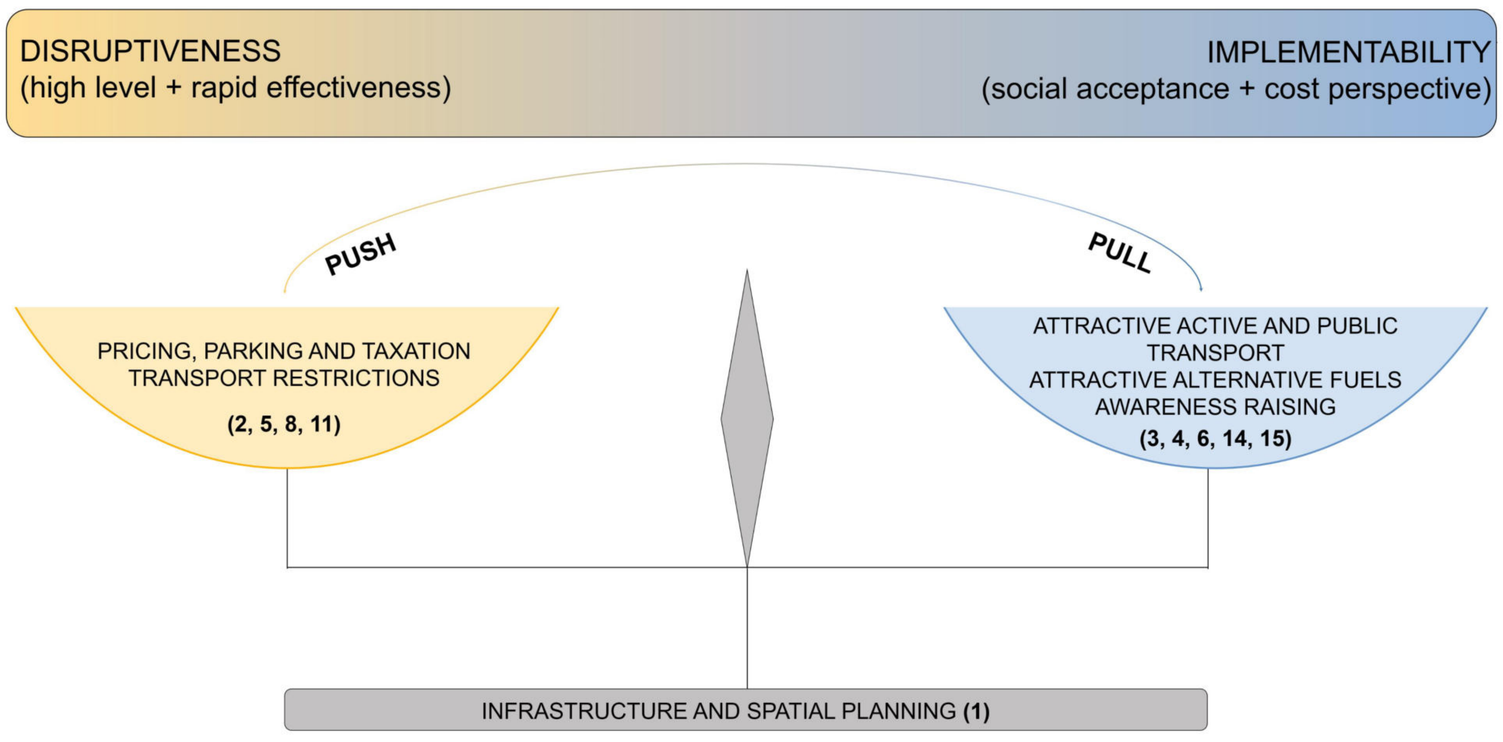
MAIN FINDINGS

- Policies from **multiple categories** have to be combined into effective packages of measures to simultaneously ensure effectiveness and achieve other goals, such as public acceptability
- **Changes in spatial planning** as the most important, but also the most challenging long-term task
- Expand **the availability of public transportation** in terms of space and time to provide good alternatives for groups such as commuters and reduce private car use
- the main technologies discussed were **electromobility** for passenger transport and, in the long term, **hydrogen** for public transport and heavy goods transport → need to reduce private motorized transport, regardless of the specific drive or fuel (avoidance/shift focus), emphasizing that simply replacing one car with another would not lead to sustainable transport
- Various types of **pricing instruments** (e.g., road pricing, congestion pricing, or tolls) were considered effective tools for changing travel behavior, especially when combined with **parking policies** (e.g., parking management and reduction of parking spaces)
- Restrictions are classically associated with **low expected public acceptance**; therefore, they are difficult to implement without establishing additional agreements or providing incentives
- most frequently discussed soft policy approach was **raising awareness in society** to increase understanding and support for policies (including restrictive ones)
- need to **communicate the positive effects** of sustainable mobility measures in order to gain public acceptance

(D) Designing a disruptive policy package: Keeping the balance

WHAT TO CONSIDER

1) **A disruptive policy package** must be designed with **two competing goals** in mind: it must be **effective** in order to have the highest potential for disruption, and it should also have a high degree of **implementability** (high public acceptance for the policies and available resources to fund them are essential).
2) **The composition** of the policy package is more a **matter of design** than of the specific policies selected.
3) **Infrastructure provision and spatial planning** form the basis of all disruptive policy packages, but the key policies are different for **specific geographical areas (e.g., urban, suburban and rural areas)**.
4) **Including all A-S-I categories** by **avoiding** traffic wherever possible (e.g., through restrictions), **shifting** to alternative modes of transportation (e.g., by expanding attractive public transportation systems), and **improving** existing technologies (e.g., by phasing out fossil fuels and switching to alternative low-carbon solutions).
5) **The disruptive potential** comes from **well-designed policies and a successful combination** of different policies, not from innovative features alone.
6) **Lack of political will** due to fear of lack of public acceptance is a major challenge → Results highlight the **need for political courage** to implement controversial policies, as public acceptance can often be much **higher than initially expected** once people have had a chance to experience the new policies
7) **The availability of financial resources** due to high costs is another challenge that may block the implementation of new projects → the inclusion of **revenue-generating push measures** can alleviate these cost-related problems (and their public acceptance can be significantly increased by **earmarking the revenues**).



POLICY CATEGORIES: (1) Infrastructure provision/spatial planning, (2) Pricing policies (others) , (3) Alternative fuels and power trains, (4) Attractive active transport, (5) Taxation, subsidies and grants , (6) Attractive public transport , (8) Transport restrictions (others), (11) Parking policies , (14) Mode integration, (15) Soft policies/awareness-raising

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